Miguel Vicente García Mejías
Magíster en Gestión Sustentable del Turismo por la Universidad de Quintana Roo
Investigador independiente
México
[mvmejias@hotmail.com]

Lucinda Arroyo-Arcos
Doctora en Geografía Económica por la Universidad Autónoma de México
Profesora de tiempo completo en la Universidad de Quintana Roo, División de Desarrollo Sustentable, Campus Cozumel
México
[larroyo@uqroo.edu.mx]

Romano Gino Segrado-Pavón
Doctor en Ciencias Ambientales por la Universidad Autónoma del Estado de México
Profesor de tiempo completo en la Universidad de Quintana Roo, División de Desarrollo Sustentable, Campus Cozumel
México
[romano@uqroo.edu.mx]

REVISTA TURISMO y SOCIEDAD

Lieven de Marez
Doctor en Política y Ciencias Sociales por la Universidad de Gante
Director de Investigación del grupo de investigación de Medios, Innovación y Tecnologías de la Comunicación del Departamento de Ciencias de la Comunicación, Universidad de Gante
Bélgica
[Lieven.DeMarez@UGent.be]

Koen Ponnet
Doctor en Psicología por la Universidad de Gante
Profesor del grupo de investigación de Medios, Innovación y Tecnologías de la Comunicación del Departamento de Ciencias de la Comunicación, Universidad de Gante
Bélgica
[Koen.Ponnet@UGent.be]

FACTORS INFLUENCING THE INTENTION TO ADOPT A PRO-ENVIRONMENTAL BEHAVIOR BY TOURIST OPERATORS OF A MEXICAN NATIONAL MARINE PARK[1]

FACTORES QUE INFLUYEN EN LA INTENCIÓN DE ADOPTAR UN COMPORTAMIENTO PROAMBIENTAL POR PARTE DE LOS OPERADORES TURÍSTICOS DE UN PARQUE NACIONAL MARINO MEXICANO

Abstract

Tourist operators can contribute to the conservation of the environment in marine protected areas by sharing messages with visitors about their expected behaviour and the possible impacts of their actions. However, generally speaking this was done by demonstrating pro-environmental actions. Despite the importance of pro-environmental behavior, there are few studies explaining how this behavior is formed in tourist operators. The present study investigates the factors that influence the willful intention of tourist operators of a national park in Mexico to behave more pro-environmentally.

The Theory of Planned Behavior (TPB) was applied to test whether attitudes, subjective norms and perceived behavioral control predicted the pro-environmental behavioral

1 Para citar el artículo: García, M. et al. (2021). Factors influencing the pro-environmental behavior intention of tourist operators from a Mexican marine national park. *Turismo y Sociedad*, *XXIX*, pp. 221-238.
DOI: https://doi.org/10.18601/01207555.n29.10

Fecha de recepción: 11 de marzo de 2020
Fecha de modificación: 12 de junio de 2020
Fecha de aceptación: 21 de agosto de 2020

intent of tourist operators. Quantitative data were collected among 165 tourist operators and analyzed by Structural Equation Modeling (SEM). The findings revealed that the most important variable influencing tourist operators' intention is perceived behavioral control, followed by subjective norms. Unexpectedly, attitudes were not significantly associated with tourist operators' intentions. Based on the results, strategies are presented in here to promote a change in the intention of tourist operators.

Keywords: Structural Equation Modeling (SEM), Theory of Planned Behavior, environmental conservation, protected areas.

Resumen

Los operadores turísticos pueden contribuir a la conservación del ambiente en áreas marinas protegidas por medio de mensajes relacionados con el comportamiento esperado por parte del visitante, así mismo, mencionando los posibles impactos de sus acciones en el ambiente marino, pero, sobre todo, presentando un comportamiento ecológico. A pesar de la importancia que tiene el comportamiento proambiental en la protección del ambiente, existen pocos estudios que expliquen la formación de este comportamiento en los operadores turísticos. El presente estudio investiga los factores que influyen en la intención de los operadores turísticos del parque nacional "Arrecife de Puerto Morelos" de comportarse de una manera más proambiental.

Se aplicó la teoría del comportamiento planeado para evaluar si las actitudes, las normas subjetivas y el control de comportamiento percibido predecían la intención de comportamiento proambiental de los operadores turísticos. Se recolectaron datos cuantitativos de una muestra de 165 informantes; los datos se analizaron mediante el modelado de ecuaciones estructurales (SEM). Los resultados revelaron que la variable más importante es el control de comportamiento percibido, seguida de las normas subjetivas. Contrario a lo esperado, las actitudes no se asociaron de manera significativa con la intención de comportamiento proambiental de los operadores turísticos. Finalmente, con base en los resultados, se presentan estrategias para contribuir a una mejora en el comportamiento proambiental de los operadores turísticos.

Palabras clave: Modelado de ecuaciones estructurales, teoría del comportamiento planeado, conservación ambiental, áreas naturales protegidas.

1. Introduction

Protected areas are a key component of any global conservation strategy (International Union for Conservation of Nature [IUCN], 2017b; Leung et al., 2018). A protected area is defined as "a geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values" (Dudley, 2008, p. 8). Protected areas can be composed of land, inland water, marine and coastal areas or a combination of two or more of these. There is considerable evidence that protected areas are essential for biodiversity conservation and vital to cultures and livelihoods of indigenous people and local communities (The UN Environment Programme World Conservation Monitoring Centre [UNEP-WCMC], & IUCN, 2016); they also help to buffer the effects of climate change and to maintain the ecosystem services on which all societies depend (Lopoukhine et al., 2012). Furthermore, protected areas where tourist activities are allowed play an important role in raising awareness of the value of biodiversity: they

provide opportunities to educate visitors through experiences, study and interpretation, by exposing them to nature in ways that they might not experience otherwise (UNEP-WCMC, & IUCN, 2016). Last but not least, its multiple roles will become more valuable as climate events become more severe (Stolton et al., 2008).

The World Tourism Organization (UNWTO) estimates that tourism in protected areas will continue growing by 3.3% annually until 2030 (UNWTO, 2013). However, the rapidly expanding demand for tourism development associated with protected areas emphasizes the need to provide clear guidance that will contribute towards sustainable tourism consistent with the primary conservation objectives of protected areas (Leung et al., 2018). In other words, the management of protected areas need to seek that visitation does not affect the ecological integrity of ecosystems and ensure that environmental conservation is not compromised by inappropriate or poorly managed visitor use (IUCN, 2017b).

Tourism has however several negative consequences on physical (land, water, and air), biological (flora and fauna) and non-material (value) components of the environment (Lamers, & Amelung, 2007). In marine protected areas, physical damage on coral reef structures has been detected during tourist activities such as snorkeling and scuba diving (Camp, & Fraser, 2012). The demand for tourist activities in coral reefs is increasing worldwide as well (Spalding et al., 2017), and, with an increase of visitors, the possibility to damage the coral reef is higher (Santander, 2009). Furthermore, non-compliant behavior of visitors who violate protective regulations or established norms about how to behave during the visit can also affect the ecosystems in marine protected areas (Goh et al., 2017; Rife et al., 2013). It is important to clarify that ecosystems inserted in marine protected areas are also being affected by other factors besides tourist activities, such as coastal development, illegal fishing, pollution, etc. (Chan, 2017; Santander-Botello, & Propin-Frejomil, 2009; Segrado et al., 2013).

In order to reduce physical damages produced by tourist activities on ecosystems in marine protected areas, the visitors' education before and during tourist activities is important (Webler, & Jakubowski, 2016). In this regard, the tourist operators' role is of great significance to minimize the negative impacts by visitation on marine protected areas. The tourist operators can pass messages to visitors about the expected behavior, the possible impacts of their actions, the heritage values, the conservation and the management of the protected areas (López, 2017). The premise is that the messages delivered by tourist operators "influence how visitors think, feel and behave in the short term (onsite), and possibly in the long term once they have returned home" (Armstrong, & Weiler, 2002, p. 104).

The rest of the paper has been structured as follows: after this introduction, the second section presents some issues in Mexican marine protected areas and explains the relevance to consider the tourist operators' behaviors to minimize negative impacts produced by visitation. Concepts related to this research, such as the theoretical model and the hypothesis are displayed as well. In the methodology, which can be found in section 3, general information about the study area is shown, the measures part of the questionnaire is described, as well as the data collection procedure, and the data analysis approach is explained. Section 4 displays the main findings, discussions, and limitations of the study. Finally, in section 5, a summary of the key conclusions of the research is given.

2. Marine protected areas and tourist activities in Mexico

Mexico belongs to a select group of twelve nations that have the highest amount of biodiversity: almost 70% of all animal and plant species in the world can be found in this group (Secretaría de Medio Ambiente y Recursos Naturales [SEMARNAT], 2018). Moreover, it has a high rate of plants and animals that only live within the geopolitical limits of the country (Mittermeier, & Goettsch, 1992). Natural resources and culture make Mexico very popular for recreation and tourism: it is the 7th most popular destination, with over 41 million of international tourist arrivals per year (UNWTO, 2019), and an annual income of 22 million dollars (Secretaría de Turismo [SECTUR], 2018). At this point, terrestrial and marine protected areas become interesting sites to visit. In 2017, the total amount of visitors in protected areas in Mexico reached almost 2.9 million (REDPARQUES, 2018).

In Mexico, protected areas are the most important environmental policy instrument to conserve biodiversity, where the sustainable use of natural resources is promoted (Niño-Gutiérrez et al., 2011). In this regard, the importance of protected areas in Mexico is biological, economical, and social (Ortega-Rubio et al., 2015). However, many marine protected areas and coral reef ecosystems are located next to the most important tourist hotspots, such as Puerto Vallarta, Ixtapa, Huatulco and the Riviera Maya, which might cause extra pressure (Robles-Zavala, & Chang, 2018).

In marine protected areas situated in the Gulf of California (North of Mexico), issues such as overfishing, low regulation effectiveness within protected areas, loss of biodiversity due to coastal development, land use conflicts, increase of tourist activities and visitors have been identified (Rife et al., 2013; Robles-Zavala, & Chang, 2018). Moreover, in the state of Quintana Roo (Southeast of Mexico), according to Segrado et al. (2013) the most important problems in marine protected areas, among others, are related to overexploitation of species, damaging tourist practices, the development of infrastructure near ecosystems, clandestine logging, hunting and poaching, and the lack of vigilance.

In the National Park "Arrecife de Puerto Morelos" (Fig. 2), the coral reef ecosystems are threatened due to the economic and population growth and urban infrastructure of the city of Cancun, where massive tourism activities and intensive use of natural resources have deteriorated the part of the coral reef system adjacent to its coasts (Zizumbo et al., 2012). The amount of visitors has also increased: from 140,000 visitors in 2012 to 202,609 in 2016 (Comisión Nacional de Áreas Naturales Protegidas [CONANP], 2016). It is worth mentioning that coral reef ecosystems are crucial for the tourism industry in Puerto Morelos, because when this ecosystem is affected, it affects the decrease in species too, and, therefore, the marine landscape where tourist activities are carried out (Zetina, 2017). As an answer to this situation, this research proposes the study of tourist operators' intention to behave pro-environmentally as a strategy to contribute to the conservation goals of the National Park "Arrecife de Puerto Morelos"; in this context, the concept of "tour operators" includes sailors, captains and chiefs of boats, snorkel or diving guides, sport fishing guides and underwater photographers.

Pro-environmental behavior and the Theory of Planned Behavior

Different authors support the viewpoint that the origin of many environmental problems can be related to the Anthropocene epoch, when individual patterns of human behavior

have contributed to physical damage to the environment (Berenguer, & Corraliza, 2000; Crutzen, 2002; Greaves et al., 2013; Stern, 2000). Therefore, pro-environmental behaviors should be taken into account to minimize the impact of humans toward natural resources (De Leeuw et al., 2015; Goh et. al., 2017).

Pro-environmental behavior or environmentally friendly behavior refers to "behavior that harms the environment as little as possible or even benefits the environment" (Steg, & Vlek, 2009, p. 309). It also refers to a set of deliberate and effective actions which responds to social and individual requirements for protecting the environment (Corral-Verdugo, & Pinhero, 2004), and that is often considered to be sustainable behavior (Juvan, & Dolnicar, 2016). Despite all the different definitions mentioned above, most authors agree that pro-environmental behavior refers to the implementation of actions that preserve and conserve —or, at least, do not harm— the environment (Do Paço, & Raposo, 2009; López-Miguens et al., 2014).

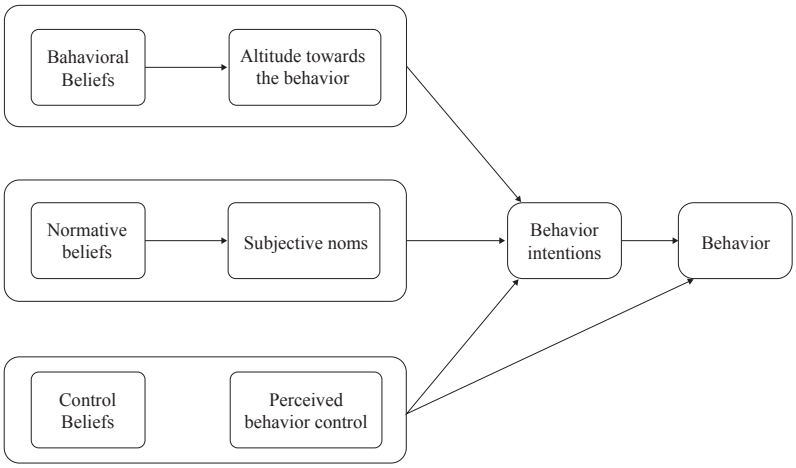
The Theory of Planned Behavior (TPB) Model "stipulates that people's attitudes, subjective norms, and perceptions of control follow reasonably and consistently from their belief, no matter how the beliefs were formed, and that in this way they influence intention and behavior" (Ajzen, 2015, p. 3). Intention or readiness to act is the most proximal determinant of behavior (Mancha, & Yoder, 2015). The intention is also driven by attitudes toward behavior, subjective norms and perceived behavioral control (Deng et al., 2016). According to Zemore and Ajzen:

> One's attitude toward the behavior is defined as one's personal evaluation of that behavior, and is based on the positive and negative outcomes expected to be associated with it. One's subjective norm represents the perceived social pressures to engage in or avoid a given behavior, and is based on the normative expectations of important referents. Perceived behavioral control refers to one's perceived ability to perform a given behavior, and is based on beliefs about factors that may facilitate or impede its performance. (2014, p. 175).

The TPB has been used lately to explain intentions and behaviors toward the protection of the environment. In this regard, Deng et al. (2016) carried out a study among farmers participating in Payment for Ecosystem Services to explore the factors were influencing their intention and behavior toward ecological conservation. The results indicated that attitudes, subjective norms, and perceived behavior control as latent variables were significantly influencing the farmers' intention and behavior. Mancha and Yoder (2015) also showed that pro-environmental behavior intentions among college students from two nationalities were driven by attitudes, subjective norms, and perceived behavior control. Furthermore, the findings from López (2017) demonstrated that attitudes and perceived behavioral control were positive related with the intention to follow environmental protection rules during diving sessions in protected areas.

The TPB has been criticized for not fully accounting for the variance in intentions (Sniehotta et al., 2014), or because of the weak link between intention and behavior (Juvan, & Dolnicar, 2017), or for not taking into account the habits from the study subjects (Klöckner, 2013). However, it is widely acknowledged that the TPB provides a good prediction of intention from attitudes, subjective norms, and perceived behavioral control in most of the applications (Ajzen, 2015), and considering environmental behavior has shown its effectiveness (Greaves

Figure 1. The Theory of Planned Behavior



Note. Source: Ajzen (1991); Ajzen, & Fishbein (1980).

et al., 2013). Furthermore, it is known that the results derived from the use of TPB can serve as a useful framework to design effective behavior change interventions (Ajzen, 2011), by identifying the beliefs that need to be modified to produce a change in intentions and subsequently in behaviors (Ajzen, 2015; De Leeuw et al., 2015).

The TPB also proposes that a multitude of background factors —such as age, sex, ethnicity, socioeconomic status, education, personality, and past experiences— can potentially influence the beliefs people hold (De Leeuw et al., 2015); nevertheless, this has not been addressed yet regarding environmental behaviors.

According to the TPB, the intention is related with pro-environmental behavior (Mancha, & Yoder, 2015) and, if the intention is modified, a positive impact on pro-environmental behavior is expected (Berenguer, & Corraliza, 2000; De Leeuw et al., 2015). So, by using the TPB as a theoretical framework, managers of protected areas can identify the most relevant factors influencing the pro-environmentally behavior intent in tourist operators and propose activities to enhance it.

The research aim was to investigate the factors associated with the tourist operators' intention to behave pro-environmentally at a Mexican marine national park. Based on the TPB model (Ajzen, 1991), and empirical results (De Leeuw et al., 2015; Deng et al., 2016; Greaves et al., 2013; Mancha, & Yoder, 2015), the following hypotheses are presented.

H1: The more favorable the attitude and subjective norm with respect to a behavior, and the greater the perceived behavior control, the stronger should be the individual intention of tourist operators to behave pro-environmentally.

H2: Sociodemographic variables, such as age and level of education, are related to attitudes, subjective norms and perceived behavioral control.

3. Method

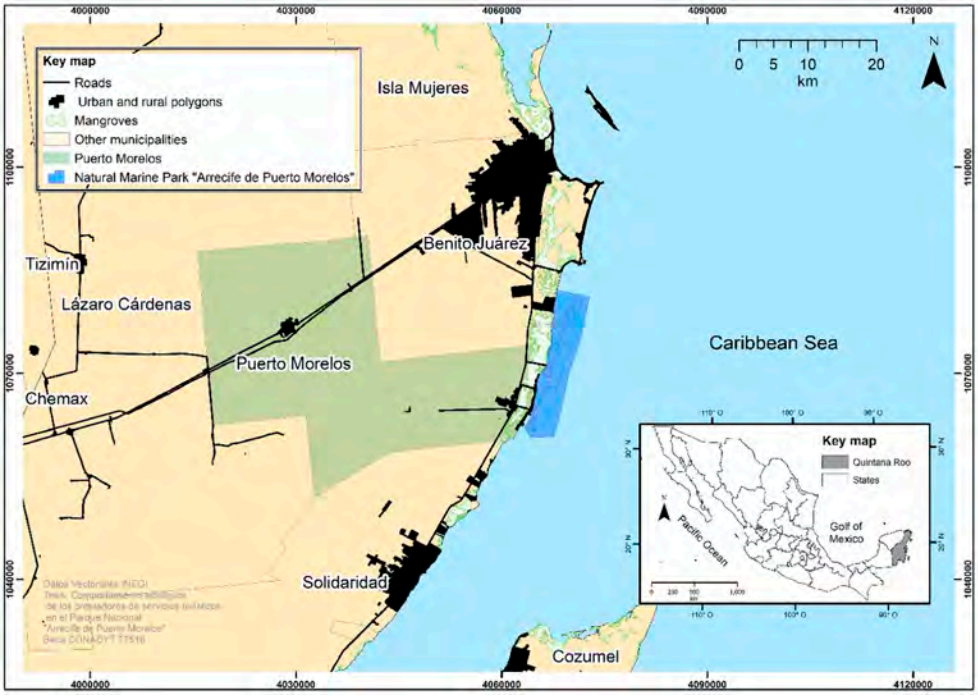
Context of the study area

The study area was the National Park "Arrecife de Puerto Morelos" (NPAPM), located in the municipality of Puerto Morelos in the North of the State of Quintana Roo (see figure 2). It is categorized as a Marine Protected Area where snorkeling, diving, kayaking, and sport fishing are the main tourist activities offered. Its total area is 9,067 hectares (Instituto Nacional de Ecología [INE], 2000). The National Park belongs to the Mesoamerican Barrier Reef System, better known as the "Big Mayan Reef", and it is considered to be the second biggest reef barrier of the world (Zetina, 2017). The area is also part of the Ramsar sites list since 2004. The Ramsar sites are wetlands of international importance, considered fundamental ecosystems for conserving biological diversity and sustainable use (Instituto Nacional de Estadística y Geografía [INEGI], 2017b).

Procedure

The questionnaire design was based on previous researcher's work, such as the Inventory of Environmental Attitudes (EIA), composed of 120 items (Milfont and Duckitt, 2010), which is a survey to evaluate the attitudes toward the environment through two factors: preservation and utilization. The first one stands for maintaining the environment as pristine as possible and protecting it from human use and alteration, meanwhile the second one refers to the right to use and alter the environment for human activities. Additionally, some items from the questionnaire proposed by Mancha

Figure 2. Study area "National Marine Park Arrecife de Puerto Morelos"



Note. Source: Authors based on INEGI (2017a).

and Yoder (2015) to assess the constructs of the TPB toward pro-environmental behavior intention were used.

The questionnaire was explicitly designed to be applied to tourist operators working at the NPAPM, its structure was as follows: first, a statement was presented to demonstrate that the investigation was elaborated by the University of Quintana Roo, financed by the National Council of Science and Technology (CONACyT) and allowed by the National Commission of Protected Areas (CONANP). Secondly, some general socio-demographic requests, such as age, level of studies, civil *status*, and function at the national park, were presented. In the third section, the items to evaluate the intention of pro-environmental behavior were displayed.

The questionnaire was first piloted (n=19) in April 2017, to ensure that the items were comprehensible and well redacted but also to identify some possible complications while answering it. The pilot questionnaire was administered to tourist operators *in situ*. The research area and those respondents were not included in the analysis of the current study. Furthermore, the tourist operators were informed beforehand that their personal information given, would be treated confidentially and anonymously.

To manage the representativeness of tourist operators' population working at NPAPM a probabilistic random sampling was used: 95% of the desired level of confidence and 5% of maximum acceptable percentage points of error were used by 187 participants. The total amount of tourist operators was 362 according to the regional office of the National Commission of Natural Protected Areas (CONANP, 2016). However, 165 questionnaires were completed due to the limitations which are explained below. The sample represents a 90% of the desired level of confidence and keeping the 5% of maximum acceptable percentage points of error by 165 completed questionnaires.

The face to face questionnaire was administered in the period June to October 2017 by four well-trained master students to touristic operators (i.e. sailors, boat captains, snorkeling guides, diving guides, sport fishing guides, subaquatic photographers, boat chiefs and members of the touristic cooperative) willing to participate. The data collection was obtained in different places, such as public and non-public piers, dive houses, boat parking lots, and private companies offering tours at the NPAPM and in the regional offices of the CONANP.

Descriptive of the sample

Of all the participants (n = 165) who took part in the data collection, 156 were male and 9 were female. The level of studies of the participants consists of 9.1% (n = 15) with primary education, 41.2 % (n = 68) with lower secondary education, 30.9% (n = 51) with upper secondary education, 18.2% (n = 30) with bachelor, master or equivalent and for 1 participant (.6 %) this information is missing. The minimum age of the tourist operators was 18 years, the maximum age was 74 years, and the average age is 34 year (SD = 11 years). The kind of work done by tourist operators is as follows: 24.8 % (n =41) were sailors, 21.8% (n = 36) were captains, 26.7 % (n = 44) were snorkel guides, 11.5% (n = 19) were dive guides, 6.1% (n =10) were sport fishing guides, 5.5% (n = 9) were subaquatic photographers, 3.0% (n = 5) boat chiefs, and 0.6% (n = 1) is member of the touristic cooperative.

Measures

Attitude. Attitudes were measured by asking six items. A sample item is "I believe that the environment has been severely abused

by humans". The items were assessed using a five-point Likert scale with item responses ranging from 1 = *strongly disagree* to 5 = *strongly agree*. The scale was reliable, with α = .76.

Subjective norm. Subjective norm was measured with six items. A sample item is "Most people who are important to me protect the environment". The six items were assessed using a five-point Likert scale with item responses ranging from 1 = *strongly disagree* to 5 = *strongly agree*. The scale was reliable, with α = .81.

Perceived behavioral control. Perceived behavioral control was measured with six items. A sample item is "I can control my involvement in environmental preservation initiatives". The six items were assessed using a four-point Likert scale with item responses ranging from 1 = *totally false* to 4 = *totally true*. The scale was reliable, with α = .80.

Intention. The intention to engage in environmentally friendly behavior was measured using two items: "I intend to engage in environmentally friendly behavior in the forthcoming month" and "I plan to stop wasting natural resources in the forthcoming month", scored on a five-point Likert scale, ranging from 1 = very unlikely to 5 = very likely agree. The reliability of the scale was good (α = .84).

Data analysis

Structural Equation Modeling (SEM) was applied to the collected data using Mplus 8 to examine the relationships among the theory of planned behavior constructs (Muthén, & Muthén, 2012). The analyses were performed using the following approach. First, a measurement model was built to test whether the observed variables reliably reflect the hypothesized latent variables (i. e. attitudes, norms, perceived behavioral control, and intention) in the research model. Thereafter, a structural model was estimated with attitudes, subjective norms and perceived behavioral control, as predictor variables, and intention as an endogenous variable. Structural Equation Modeling results were obtained with a maximum likelihood mean adjusted, because preliminary tests suggested that some indicators were not normally distributed.

The model fits of the measurement and path models were evaluated according to several fit indices. Given that the χ^2 is almost always significant and not an adequate test of the model fit (Brown, 2015; Kline, 2011), others indices were reported, such as the Comparative Fit Index (CFI) (Bentler, 1990), the Root Mean Square Error of Approximation (RMSEA) (Steiger, 1990) and the Standardized Root Mean Square Residual (SRMR, Kline, 2011). The CFI ranges from 0 to 1.00, with a cut-off of .95 or higher, indicating that the model provides a good fit, and .90 indicating that the model provides an adequate fit (Byrne, 2001; Hu, & Bentler, 1999). RMSEA values below .05 indicate a good model fit, and values between .06 and .08 indicate an adequate fit (Ponnet, 2014). The SRMR is a standardized summary of the average covariance residuals (Kline, 2011). A relatively model fit is indicated when the SRMR is smaller than .08 (Hu, & Bentler, 1999).

4. Results

Descriptive statistics

The descriptive of the variables is presented in Table 1. As shown in Table 2, all correlations between attitudes, norms, perceived behavioral control and intention yielded positively significant.

Table 1. *Descriptive of the Study Variables*

	M	*SD*
Attitudes		
Att1. Humans are severely abusing the environment.	4.50	.79
Att2. It makes me sad to see forests cleared for agriculture, urban development, and touristic use.	4.37	.90
Att3. I am the kind of person who makes efforts to conserve natural resources.	4.46	.68
Att4. I believe that the environment has been severely abused by humans.	4.55	.75
Att5. Whenever possible, I try to save natural resources.	4.41	.74
Att6. I think spending time in nature is boring *(reverse scored).*	4.25	1.11
Social norms		
Sn1. Most people who are important to me think I should protect the environment.	4.32	.77
Sn2. Most people who are important to me want me to be environmentally friendly.	4.32	.76
Sn3. Most people whose opinion I value think that it is important to reduce waste.	4.18	.88
Sn4. Most people who I respect and admire engage in environmentally friendly behaviors.	3.84	1.01
Sn5. Most people who are important to me protect the environment.	3.96	.92
Sn6. I feel under social pressure to preserve the environment.	3.75	1.00
Perceived behavioral control		
Pbc1. I find it easy to be friendly with the environment.	3.46	.76
Pbc2. I am confident that I can protect the environment.	3.50	.71
Pbc3. I can control my involvement in environmental preservation initiatives.	3.42	.68
Pbc4. Thanks to my resourcefulness, I always find a way to be friendly with the environment.	3.33	.68
Pbc5. I am in full control of my actions to protect the environment.	3.33	.78
Pbc6. I am good at leading a green lifestyle.	3.20	.75
Intention		
Int1. I intend to engage in environmentally friendly behavior in the forthcoming month.	4.28	.85
Int2. I plan to stop wasting natural resources in the forthcoming month.	4.36	.82

Note. Author based on Mancha, & Yoder (2015).

Table 2. Correlations between the latent constructs

	Attitudes	*Subjective norms*	*Perceived behavioral control*
Attitudes	1		
Subjective norms	.52*	1	
Perceived behavioral control	.59*	.61*	1
Intention	.35*	.51*	.57*

Note. **p* <.01. Source: Authors.

Measurement and structural models

The fit indices of the initial model were acceptable, except for one score (CFI = .085). A modification index suggested to freely estimate the error covariance between two similarly worded items (att1 and att4). By allowing this covariance, the model provided an adequate fit for the data: χ^2 (162) = 237.456, p < .001; CFI = .91, RMSEA = .053 (CI: .038–.067), SRMR = .076. All factor loadings were significant and above .45. Subsequently, age and level of education

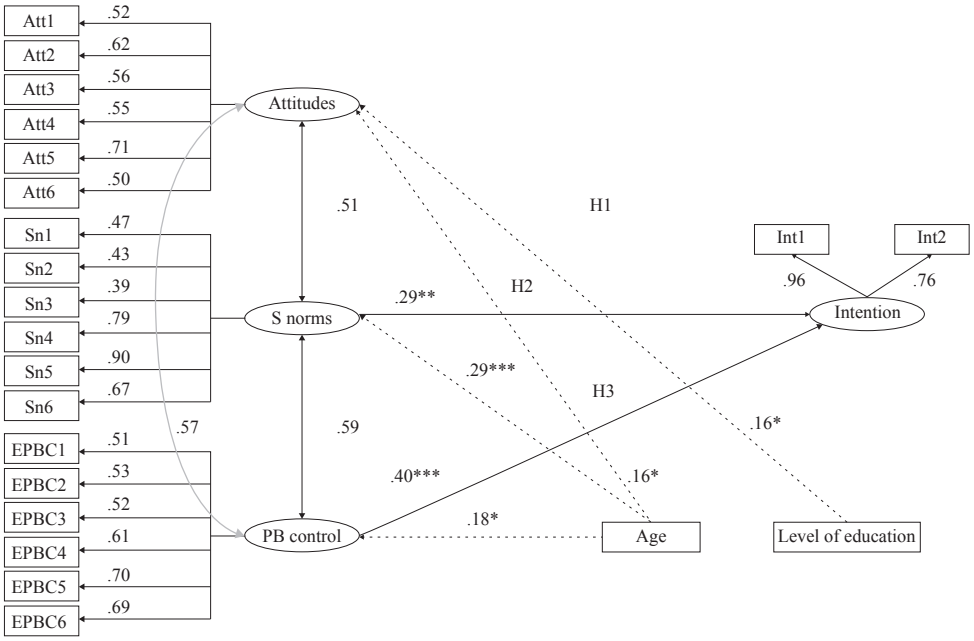
were added as covariates in the analyses and examined the relationships between both variables and the study variables. Level of education (lower secondary education) was significantly related to attitudes (β = .16, p = .02), but was not significantly related to subjective norms (β = .07, p = .29), perceived behavioral control (β = .03, p = .64), and intention (β = .01, p = .88). This suggests that positive attitudes toward the environment are not always related with higher level of education. Age (34 years average) was significantly associated with attitudes (β = .16, p = .04), subjective norms (β = .28, p = .000), and perceived behavioral control (β = .18, p = .01), but not with intention (β = .01, p = .85). This suggests that the intention to perform pro-environmental behavior does not seem to be affected in adults. The results of the structural model are presented in Figure 3. The results of the fit statistics indicated an adequate model fit: $\chi 2$ (197) = 27.09, p < .001, CFI = .92, RMSEA =.050 (C.I. 90%: 0.035-0.063), SRMR = .076.

Our analyses revealed that attitudes, subjective norm and perceived behavioral control, together with the covariates, explain 34.4% of the variance in intention (p = .005). The most important predictor of participants' intention to engage in environmentally friendly behavior is perceived behavioral control (β = .40, *p* < .001), accompanied by a significant contribution of norms (β = .29, *p* < .01). Rather unexpectedly, attitudes were not related to intention (B= -.06, p = .57).

Discussion

The aim of the present study was to investigate the factors associated with tourist operators' intention to behave environmentally friendly. The study relied on the Theory of Planned Behavior and examined attitudes, subjective norms, perceived behavioral

Figure 3. Results of the structural model based on the Theory of Planned Behavior



Note. Source: Authors.

control, and socio-demographic variables of 165 tourist operators. SEM analysis revealed that perceived behavioral control was the most important predictor toward intention, followed by subjective norms. Contrary to the expectations, attitudes were not significantly associated with intention, however a possible explanation is given. Additionally, the level of education (lower secondary education) and age (34) were included in the analysis as covariates.

The results showed that level of education was positively related with attitudes while the subjective norms and perceived behavior control were not. This finding suggests that attitudes toward the intention to behave pro-environmentally are already formed in the low education level in tourist operators, and that a positive evaluation of the environment cannot be exclusively found in higher education circumstances. However, the non-relation with subjective norms might suggest that the level of education of tourist operators does not have an influence on the peer pressure toward the intent to behave pro-environmentally. Additionally, the level of education does not affect their self-perception to engage in such behaviors. Meanwhile, the average age (34) was positively related with attitudes, subjective norms, and perceived behavior control, but not with intention. This finding might suggest that the age influences their general beliefs regarding attitudes, peer pressure, and self-perception to engage in pro-environmental behaviors.

In this research context, as perceived behavior control was the most important predictor toward pro-environmental behavior, it is suggested that the self-perception of tourist operator's abilities to perform a pro-environmental behavior has a greater importance than attitudes or subjective norms. This outcome is similar with the work from López (2017), where divers considered this factor the most relevant to follow environmental protection rules during diving sessions, or with the one from Deng et al. (2016), where the farmers´ intention to continue in payments for ecosystems service programs was the most positively related with perceived behavior control. These examples reflect that having a positive self-perception of abilities plays an important role in pro-environmental behavior intentions.

In addition, the results revealed that the item "I am in full control of my actions to protect the environment" contributed the most to the perceived behavior control (see Figure 3). Based on the results, managers from the NPAPM should carry out programs to enhance abilities toward the environmental conservation of the protected area. Is important to declare that the CONANP is constantly carrying workshops mainly related with license permissions to work, closed fishing seasons, operational rules and research works taking place at the NPAPM, and this might be producing the effect to this result. However, in workshops such as the benefits of living/working in a healthy environment, good tourist practices while having a tour in the protected area, or campaigns to promote the correct use of trash cans should be implemented.

In this study, the subjective norms were the second most important predictor influencing the pro-environmental behavior intention of tourist operators. The item with the highest loading on the factor subjective norm was "Most people who are important to me protect the environment", followed by "Most people who I respect and admire engage in environmentally behaviors".

As subjective norms are influencing the pro-environmental intentions in tourist operators, it means that opinions and actions from close references are important

to them to create an intention to behave pro-environmentally (Ajzen, 2011). In this order, collective activities (e. g. cleaning of beaches, vigilance of turtle nests during the season) should be promoted by the managers of the marine national park, including the participation of tourist operators together with their relatives, friends or colleagues. Certain actions should be implemented, like the use of signs in strategic areas with the expected tourist operator/visitor behavior during the working hours/their stay in the marine protected area, and briefings before tourist activities informing the visitors about the norms they must follow.

Unlike expected, the factor "attitudes" was not positively related to pro-environmental behavior intent. This contrasts with studies, albeit in a different context, where the attitudes are positively related to intention (e. g. López, 2017; Mancha, & Yoder, 2015). However, a possible explanation for these findings is that tourist operators already have highly positive attitudes toward behaving environmentally friendly because of their daily contact with the local natural resources (e. g. mangroves, coral reefs, beaches, etc.), and the awareness of the crucial role of natural resources in the local tourist activities.

Limitations of the study

This study provides important insights into the use of TPB to determine the factors affecting the pro-environmental behavior intention of tourist operators in marine protected areas. Despite that, some limitations of the study should be noted. First, the subjective norms items did not specify which persons were important to the tourist operators; in other words, it might be interesting to fine-tune the items in order to be able to explain better where the social pressure is coming from (i. e. colleagues, relatives, employers, friends, etc.). A second limitation is the small sample size (n = 165) of this study, as SEM findings are less stable when estimated from small samples (Ullman, 2006). So future studies should consider taking into account bigger sample sizes. A third limitation is the social desirability, that refers to the possibility that individuals are likely to present themselves somewhat consistently and somewhat favorably (Ruepert et al., 2016). It was not possible to control the social desirability while tourist operators were completing the questionnaires. Ultimately, the sample size was not achieved because some tourist operators were not willing to participate, and because participants were working in more than one marine protected area and it was difficult to localize them.

5. Conclusion

The tourist activities in marine protected areas should not compromise the long term conservation of the ecosystems. In this regard, a proper management of visitors can contribute to achieving the conservation goals in marine protected areas. The present investigation studied the intention of tourist operators to behave pro-environmentally because their role can contribute to minimizing the negative impacts caused by visitors. The premise is if they behave pro-environmentally, they will also promote these kind of behaviors on visitors. The National Park of Puerto Morelos was chosen because several factors exert pressure on its ecosystem, such as local coastal development, but also the urban expansion of neighbor cities like Cancun or Playa del Carmen, furthermore because of the growing amount of visitors.

TPB as a theoretical framework showed to be useful in this study to determine the factors influencing the pro-environmental behavior intent of tourist operators. The data was analyzed by Structural Equation

Modeling. In this regard, tourist operators' self-efficacy seems to be relevant in order to behave environmentally friendly. Secondly, the actions, and behaviors from people considered as important by tourist operators can influence their intentions to perform behaviors related with the environmental protection. In this study, attitudes did not affect the intention of tourist operators to behave environmentally friendly. A possible explanation is that tourist operators already have highly positive attitudes toward pro-environmental behavior due to their constant interaction with natural resources and the awareness of its importance in tourist activities, however further research is needed regarding this possible link.

Furthermore, age was positively related to attitudes, subjective norms and perceived behavior control, while the level of studies was only positively related to attitudes. With these findings was corroborated that certain background factors strengthen the general beliefs regarding intention and behaviors related with environment protection and sustainable use of natural resources. However, other backgrounds need to be addressed, such as ethnicity, personality, socioeconomic *status,* which were out the scope of this study.

Future research toward the understanding of pro-environmental behavior in tourist operators should integrate variables from more than one theoretical framework. Therefore, this research stimulates the use of variables of the theoretical model of "Motivation, Opportunity Ability " (MOA), or the theoretical model of "Values Belief Norm" (VBN), in order to improve the construction of the understanding of factors that affect both the pro-environmental intention as behavior *per se.*

Agradecimientos

Se agradece el financiamiento otorgado por el Consejo Nacional de Ciencia y Tecnología (CONACyT), así mismo a los revisores por pares y a la correctora de estilo, quienes, por medio de sus comentarios, hicieron de este trabajo algo mejor.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211. https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I. (2011). Behavioral interventions: Design and evaluation guided by the theory of planned behavior. En M. M. Mark, S. I. Donaldson, & B. Campbell (Eds.), *Social psychology for program and policy evaluation* (pp. 72-101). Guilford.

Ajzen, I. (2015). The theory of planned behaviour is alive and well, and not ready to retire: A commentary on Sniehotta, Presseau, and Araújo-Soares. *Health Psychology Review*, *9*(2), 131-137. https://doi.org/10.1080/17437199.2014.883474

Ajzen, I., & Fishbein, M. A. (1980). *Understanding attitudes and predicting social behavior*. Pearson Prentice-Hall.

Armstrong, E. K., & Weiler, B. (2002). Getting the message across: An analysis of messages delivered by tour operators in protected areas. *Journal of Ecotourism*, *1*(2-3), 104-121. https://doi.org/10.1080/14724040208668118

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*(2), 238-246. https://doi.org/10.1037/0033-2909.107.2.238

Berenguer, J. M., & Corraliza, J. A. (2000). Preocupación ambiental y comportamientos ecológicos. *Psicothema*, *12*(3), 325-329. http://www.psicothema.com/pdf/338.pdf

Brown, T. A. (2015). *Confirmatory factor analysis for applied research*. Guilford Press.

Byrne, B. M. (2001). Structural Equation Modeling with AMOS, EQS, and LISREL: Comparative approaches to testing for the factorial validity of a measuring instrument. *International Journal of Testing*, *1*(1), 55-86. https://doi.org/10.1207/S15327574IJT0101_4

Camp, E., & Fraser, D. (2012). Influence of conservation education dive briefings as a management tool on the timing and nature of recreational SCUBA diving impacts on coral reefs. *Ocean and Coastal Management*, *61*, 30-37. https://doi.org/10.1016/j.ocecoaman.2012.02.002

Chan, S. B. (2017). *Los valores, normas y creencias y la intención de la protección del ambiente marino de los guías de buceo en el parque nacional Arrecifes de Cozumel* [Tesis de maestría, Universidad de Quintana Roo]. Repositorio de la Universidad de Quintana Roo. http://www.cozumel.uqroo.mx/mgst/productos/Tesis_Sandra-Chan1.pdf

Corral-Verdugo, V., & Pinheiro, J. (2004). Aproximaciones al estudio de la conducta sustentable. *Medio Ambiente y Comportamiento Humano*, *5*(1-2), 1-26. https://mach.webs.ull.es/PDFS/Vol5_1y2/VOL _5_1y2_a.pdf

Crutzen, P. J. (2002). Geology of mankind. *Nature*, *415*(23). https://doi.org/10.1038/415023a

De Leeuw, A., Valois, P., Ajzen, I., & Schmidt, P. (2015). Using the theory of planned behavior to identify key beliefs underlying pro-environmental behavior in High-School students: Implications for educational interventions. *Journal of Environmental Psychology*, *42*, 128-138. https://doi.org/10.1016/j.jenvp.2015.03.005

Deng, J., Sun, P., Zhao, F., Han, X., Yang, G., & Feng, Y. (2016). Analysis of the ecological conservation behavior of farmers in payment for ecosystem service programs in eco-environmentally fragile areas using social psychology models. *Science of the Total Environment*, *550*, 382-390. https://doi.org/10.1016/j.scitotenv.2016.01.152

Do Paço, A., & Raposo, M. (2009). "Green" segmentation: An application to the Portuguese consumer market. *Marketing Intelligence & Planning*, *27*(3), 364-379. https://doi.org/10.1108/02634500910955245

Dudley, N. (Ed.). (2008). *Guidelines for protected area management categories*. IUCN. https://doi.org/10.2305/IUCN.CH.2008.PAPS.2.en

García-Rivas, M. (12 de septiembre de 2016). *Investigación en el PN Arrecife de Puerto Morelos*. Comunicación personal.

Goh, E., Ritchie, B., & Wang, J. (2017). Non-compliance in national parks: An extension of the theory of planned behaviour model with pro-environmental values. *Tourism Management*, *59*, 123-127. https://doi.org/10.1016/j.tourman.2016.07.004

Greaves, M., Zibarras, L. D., & Stride, C. (2013). Using the theory of planned behavior to explore environmental behavioral intentions in the workplace. *Journal of Environmental Psychology*, *34*, 109-120. https://doi.org/10.1016/j.jenvp.2013.02.003

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Con- ventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Instituto Nacional de Ecología (INE). (2000). *Programa de Manejo Parque Nacional Arrecife de Puerto Morelos, México*. INE. https://www.

ncei.noaa.gov/data/oceans/coris/library/NOAA/Non-CRCP/Other/national_park_mgmt_prog_puerto_morelos_reefs.pdf

Instituto Nacional de Estadística y Geografía (INEGI). (2017a). *Anuario estadístico y geográfico de Quintana Roo 2017*. INEGI. http://www.datatur.sectur.gob.mx/ITxEF _Docs/QROO _ANUARIO _PDF.pdf

Instituto Nacional de Geografía y Estadística (INEGI). (2017b). *Datos vectoriales*. INEGI. http://www.inegi.org.mx/geo/contenidos/geoestadistica/m_geoestadistico.aspx

Juvan, E., & Dolnicar, S. (2016). Measuring environmentally sustainable tourist behaviour. *Annals of Tourism Research*, *59*, 30-44. https://doi.org/10.1016/j.annals.2016.03.006

Juvan, E., & Dolnicar, S. (2017). Drivers of pro-environmental tourist behaviours are not universal. *Journal of Cleaner Production*, *166*, 879-890. https://doi.org/10.1016/j.jclepro.2017.08.087

Kline, R. B. (2011). *Principles and practice of structural equation modelling* (3th ed.). Guilford Press.

Klöckner, C. (2013). A comprehensive model of the psychology of environmental behaviour — A meta-analysis. *Global Environmental Change*, *23*(5), 1.028-1.038. https://doi.org/10.1016/j.gloenvcha.2013.05.014

Lamers, M., & Amelung, B. (2007). The environmental impacts of tourism in Antartica: A global perspective. In P. Peeters (Ed.), *Tourism and climate change mitigation: Methods, greenhouse reductions and policies* (NHTV Academic Studies No. 6, pp. 51-62). NHTV Academic Studies.

Leung, Y., Spenceley, A., Hvenegaard, G., Buckley, R., & Groves, C. (2018). *Tourism and visitor management in protected areas: Guidelines for sustainability*. UICN. https://doi.org/10.2305/iucn.ch.2018.pag.27.en

López, J. C. (2017). *La intención del comportamiento de los guías de buceo ante las medidas de control durante la actividad de buceo en las áreas naturales protegidas* [Tesis de maestría, Universidad de Quintana Roo]. Repositorio de la Universidad de Quintana Roo. http://www.cozumel.uqroo.mx/mgst/productos/Tesis_Jovita-Lopez-Contreras.pdf

López Miguens, M. J., Álvarez González, P., González Vázquez, E., & García Rodríguez, M. J. (2014). Medidas del comportamiento ecológico y antecedentes. Conceptualización y validación empírica de escalas. *Universitas Psychologica*, *14*(1), 189-204. https://doi.org/10.11144/Javeriana.upsy14-1.mcea

Lopoukhine, N., Crawhall, N., Dudley, N., Figgis, P., Karibuhoye, C., Laffoley, D., Miranda. J., MacKinnon, K., & Sandwith, T. (2012). Protected areas: providing natural solutions to 21st Century challenges. *SAPIENS*, *5*(2), 1-16. https://journals.openedition.org/sapiens/1254

Mancha, R. M., & Yoder, C. Y. (2015). Cultural antecedents of green behavioral intent: An environmental theory of planned behavior. *Journal of Environmental Psychology*, *43*, 145-154. https://doi.org/10.1016/j.jenvp.2015.06.005

Milfont, T. L., & Duckitt, J. (2010). The environmental attitudes inventory: A valid and reliable measure to assess the structure of environmental attitudes. *Journal of Environmental Psychology*, *30*(1), 80-94. https://doi.org/10.1016/j.jenvp.2009.09.001

Mittermeier, R. A., & Goettsch, C. (1992). La importancia de la diversidad biológica de México. In J. Sarukhán, & R. Dirzo (Eds.), *México antes los retos de la biodiversidad* (pp. 63-73). Comisión Nacional para el Conocimiento y Uso de la Biodiversidad.

Muthén, L., & Muthén, B. (2012). *Mplus user's guide* (Version 7.0). Muthén & Muthén. http://www.statmodel.com/download/usersguide/Mplus%20user%20guide%20Ver_7_r3_web.pdf

Niño-Gutiérrez, N. S., Correa-Pérez, G., Saldaña-Almazán, J., & Valderrábano-Almegua, M. (2011). Las áreas naturales protegidas desde la perspectiva ambiente-sociedad-políticas ambientales. In E. Pérez-Campuzano, & M. Valderrábano-Almegua (Eds.), *Medio ambiente, sociedad y políticas públicas en el México contemporáneo* (1st. ed., pp. 145-164). Miguel Ángel Porrúa.

Ortega-Rubio, A., Pinkus-Rendón, M. J., & Espitia-Moreno, I. C. (2015). *Las áreas naturales protegidas y la investigación científica en México*. Centro de Investigaciones Biológicas del Noroeste S. C., La Paz B. C. S.; Universidad Autónoma de Yucatán, Mérida, Yucatán; y Universidad Michoacana de San Nicolás de Hidalgo. https://cobi.org.mx/wp-content/uploads/2016/01/2015_LIBRO-Las-%C3%A1reas-naturales-protegidas-y-la-investigaci%C3%B3n-cient%C3%ADfica-en-M%C3%A9xico.pdf

Ponnet, K. (2014). Financial stress, parent functioning and adolescent problem behavior: An actor-partner interdependence approach to family stress processes in low-, middle-, and high-income families. *Journal of Youth and Adolescence*, *43*(10), 1.752-1.769. https://doi.org/10.1007/s10964-014-0159-y

REDPARQUES. (2018). *Gestión del turismo en áreas naturales protegidas de Latinoamerica* (3th ed.). REDPARQUES. https://www.parquesnacionales.gov.co/portal/wp-content/uploads/2018/09/Boletin-Red-Parques-3raEd-2018.pdf

Rife, A. N., Erisman, B., Sánchez, A., & Aburto-Oropeza, O. (2013). When good intentions are not enough...Insights on networks of "paper park" marine protected areas. *Conservation Letters*, *6*(3), 200-212. https://doi.org/10.1111/j.1755-263X.2012.00303.x

Robles-Zavala, E., & Chang Reynoso, A. G. (2018). The recreational value of coral reefs in the Mexican Pacific. *Ocean and Coastal Management*, *157*, 1-8. https://doi.org/10.1016/j.ocecoaman.2018.02.010

Ruepert, A., Keizer, K., Steg, L., Maricchiolo, F., Carrus, G., Dumitru, A., García, R., Stancu, A., & Moza, D. (2016). Environmental considerations in the organizational context: A pathway to pro-environmental behaviour at work. *Energy Research & Social Science*, *17*, 59-70. https://doi.org/10.1016/j.erss.2016.04.004

Santander, L. C. (2009). *Impacto ambiental del turismo de buceo en los arrecifes coralinos de Cozumel, México* [Tesis doctoral, Universidad Nacional Autónoma de México]. Repositorio de la UNAM. http://filosofia.uca.es/grados/

Santander-Botello, L. C., & Propin-Frejomil, E. (2009). Impacto ambiental del turismo de buceo en arrecifes de coral. *Cuadernos de Turismo*, (24), 207-227. https://revistas.um.es/turismo/article/view/92721

Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT). (2018). *México, biodiversidad que asombra*. https://www.gob.mx/semarnat/articulos/mexico-biodiversidad-que-asombra

Secretaría de Turismo (SECTUR). (2018). *Compendio estadístico del turismo en México 2018*. https://www.datatur.sectur.gob.mx/SitePages/CompendioEstadistico.aspx

Segrado, R. G., Serrano, R. C., Mínguez, M. C., Cruz, G., & Juan, J. I. (2013). Estrategias de control de impactos turísticos en las áreas naturales protegidas y zonas arqueológicas de Quintana Roo, México. *CULTUR: Revista de Cultura e Turismo*, *7*(3), 5-30. https://www.ucm.es/data/cont/media/www/pag-49915/2013_Romano%20y%20Carmen_Quintanta%20Roo.pdf

Sniehotta, F. F., Presseau, J., & Araújo-Soares, V. (2014). Time to retire the theory of planned behaviour. *Health Psychology Review*, *8*(1), 1-7. https://doi.org/10.1080/17437199.2013.869710

Spalding, M., Burke, L., Wood, S. A., Ashpole, J., Hutchison, J., & Ermgassen, P. zu. (2017). Mapping the global value and distribution of coral reef tourism. *Marine Policy, 82, 104-113,* https://doi.org/10.1016/j.marpol.2017.05.014

Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology*, *29*(3), 309-317. https://doi.org/10.1016/j.jenvp.2008.10.004

Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research*, *25*(2), 173-180. https://doi.org/10.1207/s15327906mbr2502_4

Stern, P. C. (2000). New environmental theories: Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, *56*(3), 407-424. https://doi.org/10.1111/0022-4537.00175

Stolton, S., Dudley, N., & Randall, J. (2008). *Natural security: Protected areas and hazerd mitigation*. WWF. https://doi.org/10.4324/9781849774888

Ullman, J. B. (2006). Structural Equation Modeling: Reviewing the basics and moving forward. *Journal of Personality Assessment*, *87*(1), 35-50. http://dx.doi.org/10.1207/s15327752jpa8701_03

UNEP World Conservation Monitoring Centre (UNEP-WCMC), & International Union for Conservation of Nature (IUCN). (2016). *Protected Planet Report 2016. How protected areas contribute to achieving global targets for biodiversity.* UNEP-WCMC, & IUCN. https://doi.org/10.1017/S0954102007000077

Unión Internacional para la Conservación de la Naturaleza (IUCN). (2017a). *Acerca de la IUCN.* https://www.iucn.org/es/acerca-de-la-uicn

Unión Internacional para la Conservación de la Naturaleza (IUCN). (2017b). *Áreas protegidas*. https://www.iucn.org/es/node/26266

Webler, T., & Jakubowski, K. (2016). Mitigating damaging behaviors of snorkelers to coral reefs in Puerto Rico through a pre-trip media-based intervention. *Biological Conservation*, *197*, 223-228. https://doi.org/10.1016/j.biocon.2016.03.012

World Tourism Organization (UNWTO). (2013). *Tourism highlights 2013 edition*. UNWTO. https://www.e-unwto.org/doi/pdf/10.18111/9789284415427

World Tourism Organization (UNWTO). (2019). *International tourism highlights 2019 edition*. UNWTO. https://www.e-unwto.org/doi/pdf/10.18111/9789284421152

Zemore, S. E., & Ajzen, I. (2014). Predicting substance abuse treatment completion using a new scale based on the theory of planned behavior. *Journal of Substance Abuse Treatment*, *46*(2), 174-182. https://doi.org/10.1016/j.jsat.2013.06.011

Zetina, M. Á. (2017). *Puerto Morelos: la historia de un pueblo con encanto.* H. Ayuntamiento de Puerto Morelos.

Zizumbo, L., Cruz, E., & Vilchis, A. (2012). Acción social y áreas naturales protegidas: refuncionalización de recursos en Puerto Morelos, Quintana Roo, México. *Rosa Dos Ventos*, *4*(2), 192-207. http://www.ucs.br/etc/revistas/index.php/rosadosventos/article/view/1640